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ENVIRONMENTAL PROTECTION AGENCY
National Environmental Research Center
Research Triangle Park, North Carolina 27711

File Bio/Genetic Effects

Reply to Attn of: OD/HSL

Date: 6/25/73

Subject: Visit of the Russian Working Group on Biologic and Genetic Consequences

file

To: Dr. Attaway
EPA Coordinator for the US/USSR
Environmental Agreement

The complete itinerary for the Russians is attached. From June 3 through June 17, Dr. David Rall and I hosted three Russian biologists:

Academician N. P. Dubinin, Director, Institute of General Genetics, USSR Academy of Science

Madam L. Dubinina, wife of the above and researcher in the Institute of General Genetics

Dr. E. Korenyevskaya, Deputy Director, Institute of General and Communal Hygiene, USSR Academy of Medical Science

Our discussions with the Russians focused on three areas of possible scientific exchange: environmental epidemiology, mutagenesis and heavy metal toxicology. The National Institute of Environmental Health Sciences (NIEHS) was the lead agency in the area of mutagenesis and metal toxicology while EPA was the lead agency for epidemiology.

Discussions at NIEHS centered on mutagenesis testing and was concerned with the development and validation of laboratory animal tests designed to detect mutations induced by chemical and physical factors in the environment. Dr. Frederick de Serres, Chief of the NIEHS Mutagenesis Branch, arranged a program to review ongoing U.S. research in mutagenesis.

Discussions of heavy metal toxicology were mainly carried on at the University of Cincinnati, when Dr. Raymond Suskind presented ongoing efforts and discussed metals of primary importance to the U.S. and Soviet scientists.

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At the National Environmental Research Center, we spent two days in reviewing our program of epidemiologic (CHESS) studies and described in some detail our protocols for population health indicators and air monitoring. We also reviewed our radiation biology and epidemiology programs as well as current research in non-ionizing radiation. We made a field visit to the Statewide Air Pollution Research Center at the University of California, Riverside, where our Los Angeles

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CHESS studies are centered. We also paid a visit to the Rockwell Science Center (of Rockwell International Corporation) in Thousand Oaks, California to discuss the development of our community health air monitoring program (CHAMP).

We are providing to the Russians copies of our air quality criteria documents, of NATO air quality criteria reports, of reviews of cadmium, mercury, and polycyclic organic compounds in the environment, and other selected reports.

On Wednesday, Dr. Korenyevskaya gave us an informative presentation on Soviet environmental health research in relation to the standard setting process. The Soviets began setting standards in the 1940's and 1950's and now have standards for 400 water pollutants, 150 air pollutants, and 25 combinations of air pollutants. Standards are primarily developed through the Institute of General and Communal Hygiene of the USSR Academy of Medical Sciences. The standards are heavily based on human behavioral studies and animal toxicology. Maximum permissible levels for one time (one hour or less) exposures are developed from studies of olfactory response in trained subjects and from psychomotor or conditional reflex tests in humans. The electroencephalogram is widely used for these tests. Twenty-four-hour permissible levels are often based on acute and subacute animal tests which cover a gamut of biological responses including vitamin and metabolic studies, enzyme reactions, structural changes in tissues, and natural defense mechanisms. The Russians assume that when two or more pollutants are simultaneously present their biological effects will be additive. This assumption may be based on experimental evidence, but we did not have a chance to discuss this assumption. As a consequence, when two or more pollutants are concurrent in the atmosphere, the permissible level for each is reduced, by one-half if two pollutants occur together, by one-third if three pollutants, etc.

Dr. Korenyevskaya stated that in the 1950's the Soviets established a correlation between animal and human responses to pollutants. Human studies were concentrated on the health of pre-school children whose sensitivity is three to four times that of adults, according to their findings. In children, studies were conducted on immune reactions, contagious diseases, various biochemical tests (vitamin lipid levels, enzyme reactions, metabolic tests) and on rate of growth and development. Simultaneous animal toxicology studies were carried out, employing the same biological endpoints and pollutant challenges. As a result of these studies, the Russians determined that a tenfold safety margin applied to the highest no effect concentration in animals will adequately protect human populations. If less than a tenfold safety margin is used, the Russians say they have found delayed adverse effects occurring in humans.

In our visit to the Soviet Union, planned for the latter part of October, 1973, we hope to obtain copies of the research reports on which the above presentation was based. We will focus attention on the Russian studies employing neurosensory and central nervous system tests. We also hope to send one of our scientists to the Russian Institutes (probably the Institute of General and Communal Hygiene, principally) for an extended period of two to three months to learn more of the details of the Russian environmental health research program. I believe that the exchange of our working group has been very fruitful and should be particularly useful for our environmental health program in this country.

Carl M. Shy

Carl M. Shy, M. D.
Acting Director
Human Studies Laboratory

cc: Dr. Rall
Dr. Finklea
Dr. Newill
Dr. Knelson
Mr. Schoen (ORD)

ITINERARY -- VISIT OF ACADEMICIAN DUBININ
June 3-17, 1973

Sunday, June 3

6:30 p.m. Arrive New York via SU 315

Hotel: International Inn

Monday, June 4

10:30 a.m. Leave New York via BN 105

11:27 a.m. Arrive Washington, D. C.

Hotel: Statler-Hilton

Tuesday, June 5

4:35 p.m. Leave Washington, D. C., via EA 549

5:27 p.m. Arrive Raleigh-Durham, North Carolina

Hotel: Holiday Inn (Chapel Hill, N. C.)

Wednesday, June 6

9:00 a.m. National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, N. C. (Dr. Carl Shy)

Thursday, June 7

9:00 a.m. National Environmental Research Center (Dr. Carl Shy)

Friday, June 8

9:00 a.m. National Institute of Environmental Health Sciences, Department of Health, Education, and Welfare, Research Triangle Park, N. C. (Dr. David Rall)

Saturday, June 9

9:00 a.m. National Institute of Environmental Health Sciences (Dr. David Ral

Sunday, June 10

Monday, June 11

9:00 a.m. National Institute of Environmental Health Sciences (Dr. David Rall

4:40 p.m. Leave Raleigh-Durham, N. C., via PI 229

7:19 p.m. Arrive Cincinnati, Ohio

Hotel: Terrace Hilton

Tuesday, June 12

9:00 a.m. University of Cincinnati Department of Environmental Health (Dr. Raymond Suskind)

Wednesday, June 13

9:00 a.m. University of Cincinnati Department of Environmental Health (Dr. Raymond Suskind)

5:30 p.m. Leave Cincinnati, Ohio, via TW 159

6:35 p.m. Arrive Los Angeles, California

8:00 p.m. Leave Los Angeles, California, via GW 440

8:45 p.m. Arrive Riverside, California

Hotel: American Motelodge

Thursday, June 14

9:00 a.m. Statewide Air Pollution Research Center, University of California at Riverside (Dr. Carl Shy)

Afternoon Drive to Thousand Oaks, California

Hotel: West Lake Inn

Friday, June 15

9:00 a.m. Rockwell Science Center (Dr. Carl Shy)

Afternoon Drive to Los Angeles, California

Hotel: Hacienda

Saturday, June 16

9:00 a.m. Leave Los Angeles, California, via TW 844

5:08 p.m. Arrive New York, New York

Hotel: Plaza

Sunday, June 17

9:30 p.m. Leave New York via SU 316

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Visit of Russian Biologists to NERC/RTP - Room M-303

Wednesday, June 6

9:00 - 9:30 a.m.	NERC Director's Welcome and Overview of Research Program - John F. Finklea, M. D.
9:30 - 10:15 a.m.	CHESS Overview - Carl M. Shy, M. D.
10:15 - 11:00 a.m.	Chronic Respiratory Disease Studies in Populations - Robert S. Chapman, M. D.
11:00 - 11:15 a.m.	Break
11:15 - 12:00 p.m.	Asthma and Air Pollution - Jean G. French, Ph.D.
12:00 - 12:30 p.m.	Tour of the HSL Bioenvironmental Laboratory Branch at the Chemstrand facility
12:30 - 1:30 p.m.	Lunch with representatives of the Chemstrand Corporation at Chemstrand
1:30 - 2:15 p.m.	Controlled Human Exposure to CO - John H. Knelson, M.D.
2:30 - 3:15 p.m.	Pollution - Infection Combined Effects on Animals - Dr. David Gardner
3:30 - 3:45 p.m.	Break
3:45 - 4:45 p.m.	Surveillance of Human Pollutant Burdens Anthony V. Colucci, Ph.D.
7:00 - 10:00 p.m.	Dinner and reception for participants at home of Dr. and Mrs. C. M. Shy

Thursday, June 7

9:00 - 10:00 a.m.	Experimental Radiation Biology - Dr. John Garner
10:00 - 10:30 a.m.	Radiation Epidemiology - Mrs. E. Tompkins
10:30 - 10:45 a.m.	Break
10:45 - 11:30 a.m.	Microwave Effects on Biologic Systems - Dr. Carl Blackman
11:45 - 12:45 p.m.	Lunch
1:00 - 1:45 p.m.	Preparation of Air Quality Criteria for Standard Setting - Dr. R. Boksleitner
1:45 - 3:00 p.m.	Open Discussion
3:30 p.m.	Human Studies Laboratory Picnic at Wrightwood Park